Lockheed Martin

Scientific Engineering Response and Analytical Services 2890 Woodbridge Avenue Building 209 Edison, NJ 08837-3679 Telephone 732-321-4200 Facsimile 732-494-4021



DATE: September 23, 2014

TO: Mark Sprenger, EPA/ERT Work Assignment Manager

THROUGH: Rick Leuser, SERAS Deputy Program Manager

FROM: Christopher Gussman, SERAS Task Leader

SUBJECT: TRIP REPORT -CORNELL-DUBILIER SITE BENZIDINE SAMPLING,

CORNELL-DUBILIER ELECTRONICS SITE, SOUTH PLAINFIELD, NEW JERSEY,

WORK ASSIGNMENT SERAS-087

INTRODUCTION

Scientific, Engineering, Response, and Analytical Services (SERAS) personnel were tasked to assist EPA/ERT in providing EPA Region 2 with support to confirm the presence or absence of benzidine in the sediments of the Bound Brook (Creek) at and associated with the Cornell-Dubilier Site. This sampling effort is a follow up of the noted but unexpected presence of benzidine during an earlier sampling event. This effort focused on fourteen sediment sampling locations that were determined by EPA Region 2. (Figure 1).

The Cornell-Dubilier Electronics Site consists of a 25-acre property located at 333 Hamilton Boulevard in South Plainfield, Middlesex County, NJ. During its years of operation at the Site, from 1936 to 1962, the Site manufactured electronic parts and components, including capacitors. CDE also tested transformer oils onsite for an unknown period of time. It is estimated that 540 people reside within 0.25 miles of the Site, and the nearest residential homes are less than 200 feet from the Site. The total population estimated to live within one mile of the Site is 8,700.

It has been alleged that during the period of operation, the company dumped transformer oil contaminated with polychlorinated biphenyls (PCBs) directly onto Site soils. A former employee has claimed that the rear of the property was saturated with polychlorinated biphenyls (PCB) contaminated transformer oils and that transformers were also buried behind the facility during the same time period. New Jersey Department of Environmental Protection (NJDEP) personnel visited the Site on March 12, 1985 and noted that the back of the facility contained a black soil unnatural to the area. In 1988, a response letter was delivered to the NJDEP by a law firm representing CDE, which indicated that small accidental leaks or spills of PCBs occurred at the Site property and that liquid-vapor degreasers were utilized during processes conducted at the Site. Trichloroethene (TCE) was the degreasing agent admitted to be used. An investigation conducted by NJDEP personnel in the vicinity of Hamilton Boulevard during the period of

1988-1991 revealed significant ground water contamination consisting mainly of trichloroethylene (TCE) and tetrachloroethene (PCE).

Releases of contaminants including PCBs into Bound Brook have been previously documented in a 1999 ERT report entitled "Ecological Evaluation" (REAC QAPP 0360-DQAPP-100308). Historical sediment sampling by EPA Region II identified the presence of the semi-volatile compound (SVOC) benzidine. Benzidine was not identified during any other sediment sampling event. The objective of this round of sediment sampling is to determine if benzidine is present in the sediment or if historical analytical results represent a "false positive". Surface sediment was collected from fourteen locations in and along the Bound Brook and analyzed for benzidine. Additional sampling may be conducted in the future to determine the extent and magnitude of the benzidine contamination as well as potential benzidine source.

ACTIVITES

On the morning of August 5, 2014 the LM/SERAS Task Leader, Christopher Gussman and Stephen Blaze of EPA/ERT traveled to the Site. At this time they met with Christopher Purkiss (Louis Berger) who has been involved with much of the work at the Site and greatly assisted in locating the preselected sampling locations which are scattered over several miles. After traveling to the general vicinity of each sampling area, the LM/SERAS Task Leader used a Trimble GPS to narrow down the exact sampling location. Sediment samples were collected in consecutive numerical order beginning with the most upstream location (LBG01) at Talmage Road and continuing downstream to LBG13 at Shepherd Ave. LBG14, located in a separate branch of the stream just off Drake Ln (Piscataway, NJ), was collected last. All sample collection was completed withiin one work day.

Surface sediment was collected within the Bound Brook and its confluences in accordance with SERAS Standard Operating Procedure (SOP) #2016, *Sediment Sampling*. A small Jon boat was needed to collect the samples at LBG07 and LBG08 but all other locations could be reached on foot with waders. The sediment samples were then submitted the following day (August 6th) to be analyzed by Katahdin Analytical Services (Katahdin) in Maine for SVOCs but only benzidine was to be reported. Benzidine concentrations in the sediment was analyzed according to SW 846 Method 8270D by Katahdin using [SOP] CA-226-04.

The LM/SERAS Task Leader received notification on August 7th, 2014 that the sediment samples arrived at the laboratory approximately two degrees warmer than the 10 degrees Celsius maximum required by laboratory protocol. In addition, one jar was broken (although contained) and the cooler looked like it was handled roughly during transit. The Task Leader consulted with EPA/ERT and it was decided to analyze the samples anyway. Preliminary analytical results indicated that benzidine was below the reporting limit at all of the locations. However, the results were suspect due to the temperature at arrival and could only be considered estimated values. Because of that a decision was made to recollect the samples. At the same time an inquiry was made to the laboratory to see if they could also lower the benzidine detection limit. The laboratory indicated they could use Selected Ion Monitoring (SIM) instead of a linear run, which would result in a lower reporting limit.

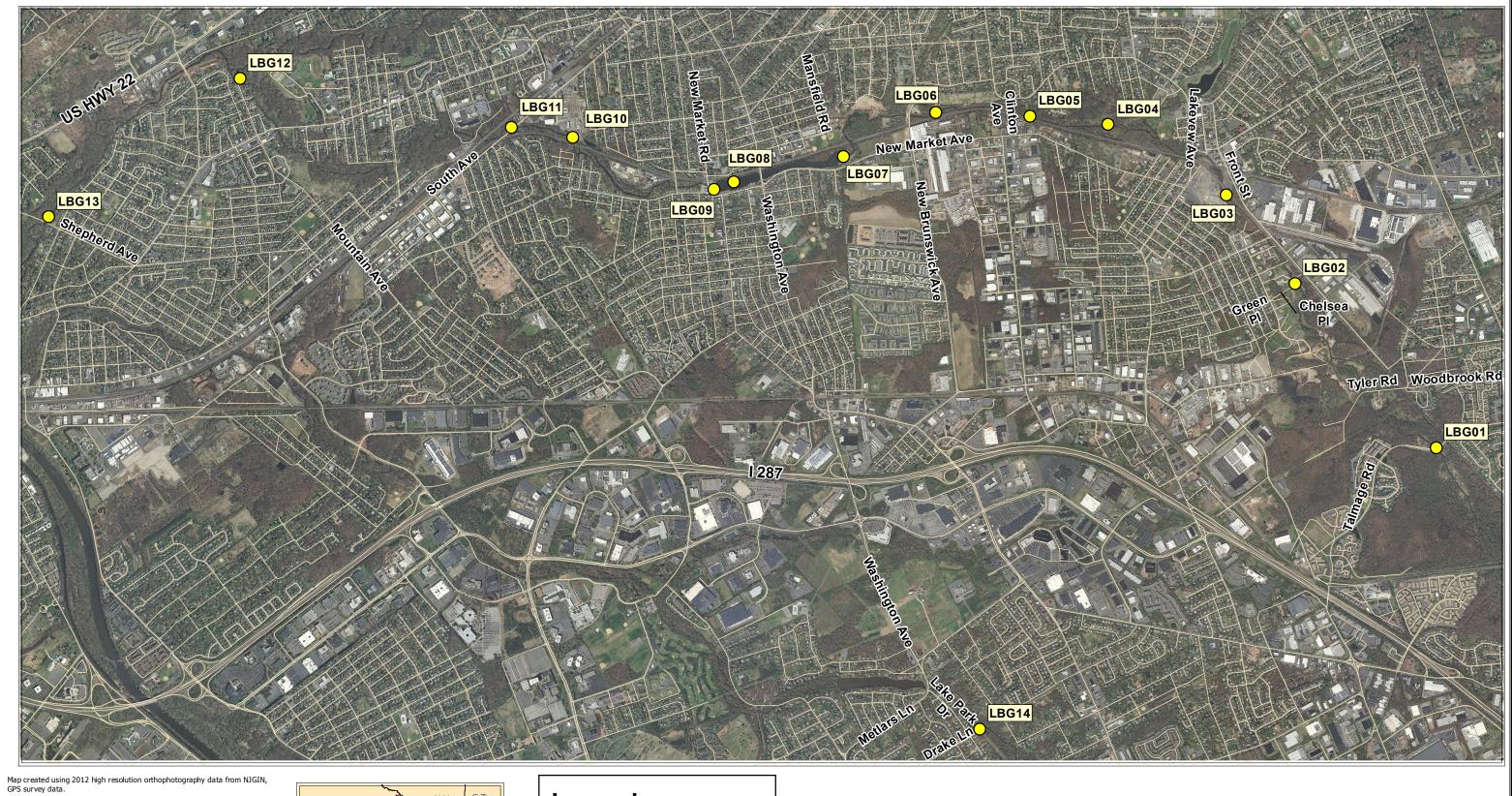
The Task Leader and the EPA/ERT Work Assignment Manager, Mark Sprenger, returned to collect sediment samples from the same locations on August 18, 2014. These sediment samples were shipped to

the laboratory on August 19 and arrived at the laboratory on August 20, 2014. This time there were no issues during shipping and the samples arrived at the laboratory sufficiently cold and without incident.

Results of this second round of sampling did show the presence of benzidine in the sediment at some of the locations. The validated analytical report may be found in Appendix A. Benzidine was not detected in the upstream reference location (LBG01) nor in the other creek at (LBG14) or field blank control. Benzidine was present just upstream of the Site (LBG02) and was found at the highest concentrations just below the outfall of the Site (LBG03). Additional benzidine was detected in sediment at several locations downstream. Figure 1 illustrates the sampling locations and Table 1 below indicates benzidine concentrations found at each of the locations.

Table 1: Benzidine Concentrations

Sampling Location	Benzidine in Sediment (ug/Kg)
LBG01	U
LBG02	U
Field Duplicate at LBG02	100
LBG03	790 J
LBG03A	3000 Ј
LBG04	210 J
LBG05	U
LBG06	170
LBG07	110 J
LBG08	330 J
LBG09	92
LBG10	300 J
LBG11	83
LBG12	U
LBG13	U
LBG14	U
Field Blank	U



Map Creation Date: 28 JUly 2014

Coordinate system: New Jersey State Plane FIPS: 2900 Datum: NAD83 Units: Feet

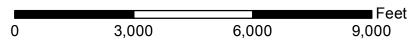


Site Location

Data: g:\arcviewprojects\SERAS01\00-087 MXD file: g:\arcinfoprojects\SERAS01\SER00087_Cornell_Dublier/ 087_Proposed_Benzidine.mxd



Sampling Location



U.S. EPA Environmental Response Team Scientific Engineering Response and Analytical Services EP-W-09-031 W.A.# 0-087

Figure 1 Benzidine Sampling Locations 2014 Cornell-Dubilier Electronics Vapor South Plainfield, New Jersey

ANALYTICAL REPORT

Prepared by Lockheed Martin Information Systems and Global Services/Environmental Services Scientific, Engineering, Response and Analytical Services

> Cornell Dubilier Electronics Vapor Intrusion Site S. Plainfield, NJ

> > September 2014

EPA Work Assignment No. SERAS-087 LOCKHEED MARTIN Work Order SER00087 EPA Contract No. EP-W-09-031

> Submitted to M. Sprenger **EPA-ERT** 2890 Woodbridge Ave, Edison, NJ 08837

D. Killeen

QA/QC Officer

Umm

K. Taylor Program Manager Date

Analysis by: Katahdin Labs

Prepared by:/Validated by:

Y. Mehra & J. Soroka/A. LoSurdo



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Communication Chains of Custody

Appendices

Appendix A Data for Benzidine in Sediment

Z 110

Appendices will be furnished on request.





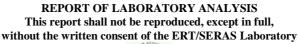
TESTING LABORATORIES INFORMATION

Analysis of Benzidine in Sediment by EPA SW-846 Method 8270D, "Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)", Test Methods for Evaluating Solid Wastes: Physical/Chemical Methods, SW-846, U.S. EPA Office of Solid Wastes, 3rd edition, .

Katahdin Analytical Services 600 Technology Way Scarborough, ME 04070

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standards, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

Katahdin Analytical Services is certified by the New Hampshire Environmental Laboratory Accreditation Program (ELAP), NELAP Laboratory Certification ID #02001 in solid matrices for benzidine.







Detailed Sample Information

Katahdin Sample #	Field Sample #
SH6652-1	0-087-081814-0021
SH6652-2	0-087-081814-0022
SH6652-3	0-087-081814-0023
SH6652-4	0-087-081814-0024
SH6652-5	0-087-081814-0025
SH6652-6	0-087-081814-0026
SH6652-7	0-087-081814-0027
SH6652-8	0-087-081814-0028
SH6652-9	0-087-081814-0029
SH6652-10	0-087-081814-0030
SH6652-11	0-087-081814-0031
SH6652-12	0-087-081814-0032
SH6652-13	0-087-081814-0033
SH6652-14	0-087-081814-0034
SH6652-15	0-087-081814-0018
SH6652-16	0-087-081814-0019
SH6652-17	0-087-081814-0020





Introduction

SERAS personnel, in response to WA# SERAS-087, provided analytical support for environmental samples collected from the Cornell Dubilier Electronics Vapor Intrusion Site in S. Plainfield, NJ as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
2-081914-095139- 0009	17	08/18/14	08/20/14	08/26/14 through 08/28/14	Sediment	Benzidine/ SW-846 Method 3550/8270D	Katahdin Analytical Services	Z 110

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods as stated in the QAPP. The laboratory reported the data to two significant figures. Any other representation of the data is the responsibility of the user. Data were validated using a Stage 4 validation done manually (S4VM) in accordance with the "Guidance for Labeling Externally Validated Data for Superfund Use." All data validation flags have been inserted into the results tables.

Benzidine in Sediment Package Z 110

Benzidine did not meet the percent relative standard deviation (%RSD) criterion for the initial calibration of 08/27/14. Results for benzidine in samples 0-087-081814-0020, 0-087-081814-0027 and 0-087-081814-0032 are qualified estimated (J).

The area for the internal standard chrysene- d_{12} did not meet the internal standard criterion for samples 0-087-081813-0020, 0-087-081814-0021, 0-087-081814-0024 and 0-087-081814-0027. Results for benzidine in these samples are qualified estimated (J).

The percent moisture for sample 0-087-081814-0025 was greater than 70%. Result for benzidine in this sample is qualified estimated (J).

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.

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Summary of Abbreviations

C Centigrade

CLP Contract Laboratory Program

COC Chain of Custody conc concentration cont continued

CRDL Contract Required Detection Limit
CRQL Contract Required Quantitation Limit

D (Surrogate Table) value is from a diluted sample and was not calculated

Dioxin Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)

DFTPP Decafluorotriphenylphosphine

EMPC Estimated maximum possible concentration GC/MS Gas Chromatography/ Mass Spectrometry

IS Internal Standard

LCS Laboratory Control Sample

LCSD Laboratory Control Sample Duplicate
MDA Minimum Detectable Activity
MS (BS) Matrix Spike (Blank Spike)

MSD (BSD) Matrix Spike Duplicate (Blank Spike Duplicate)

MW Molecular Weight

NA Not Applicable or Not Available NAD Normalized Absolute Difference

NC Not Calculated

NR Not Requested/Not Reported

NS Not Spiked % D Percent Difference % REC Percent Recovery

SOP Standard Operating Procedure ppbv parts per billion by volume

ppm parts per million

pptv parts per trillion by volume
PQL Practical Quantitation Limit
PAL Performance Acceptance Limit
QA/QC Quality Assurance/Quality Control

QL Quantitation Limit RL Reporting Limit

RPD Relative Percent Difference RSD Relative Standard Deviation

SERAS Scientific, Engineering, Response and Analytical Services

SIM Selected Ion Monitoring

Sur Surrogate

TIC Tentatively Identified Compound

TCLP Toxicity Characteristic Leaching Procedure

VOC Volatile Organic Compound

Value exceeds the acceptable QC limits

m^3	cubic meter	g	gram	kg	kilogram	L	liter
μg	microgram	μL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	S	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected

J- Value is estimated low (metals only) UJ Not detected and RL is estimated

N Presumptively present (Aroclors only)

Rev. 1/14/09

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Table 1.1 Result of the Analysis for Benzidine In Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site Results Based on Dry Weight

	,	Page 1 of 2
Method SW8270C SIM		

Laboratory Sample Number Sample Number Sample Location Percent Solids	WG14866 Method Blank N/A		SH665 0-087-0818 LBG0 77	14-0021	SH665 0-087-0818 LBG 73	314-0022 05	SH669 0-087-0818 LBG 64	314-0023 06
Analyte		RL ug/Kg	Result ug/Kg	RL ug/Kg	Result ug/Kg	RL ug/Kg	Result ug/Kg	RL ug/Kg
Benzidine	U	67	210 J	82	U	91	170	100

Table 1.1 (cont) Result of the Analysis for Benzidine In Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site Results Based on Dry Weight

Method	SW8270C	SIM

Laboratory Sample Number	SH6652-4	SH6652-5	SH6652-6	SH6652-7	
Sample Number	0-087-081814-0024	0-087-081814-0025	0-087-081814-0026	0-087-081814-0027	
Sample Location	LBG07	LBG08	LBG09	LBG10	
Percent Solids	71	25	77	78	
Analyte	Result RL	Result RL	Result RL	Result RL	
	ug/Kg ug/Kg	ug/Kg ug/Kg	ug/Kg ug/Kg	ug/Kg ug/Kg	
Benzidine	110 J 93	330 J 260	92 86	300 J 170	

Table 1.1 (cont) Result of the Analysis for Benzidine In Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site Results Based on Dry Weight

SH6652-9

SH6652-10

SH6652-11

3

SH6652-8

Method SW8270C SIM

Laboratory Sample Number

Sample Number	0-087-081814-0028	0-087-081814-0029	0-087-081814-0030	0-087-081814-0031
Sample Location	LBG11	LBG12	LBG13	LBG14
Percent Solids	83	77	82	73
Analyte	Result RL	Result RL	Result RL	Result RL
	ug/Kg ug/Kg	ug/Kg ug/Kg	ug/Kg ug/Kg	ug/Kg ug/Kg
Benzidine	83 80	U 85	U 80	U 90



4

Table 1.1 (cont) Result of the Analysis for Benzidine In Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site Results Based on Dry Weight

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U 86

Method SW8270C SIM				-
Laboratory Sample Number	SH6652-12	SH6652-13	SH6652-14	SH6652-15
Sample Number	0-087-081814-0032	0-087-081814-0033	0-087-081814-0034	0-087-081814-0018
Sample Location	LBG03A	FD01	FIELD BLANK 01	LBG01
Percent Solids	77	69	100	75
Analyte	Result RL	Result RL	Result RL	Result RL
	ug/Kg ug/Kg	ug/Kg ug/Kg	ug/Kg ug/Kg	ug/Kg ug/Kg

Table 1.1 (cont) Result of the Analysis for Benzidine In Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site Results Based on Dry Weight

100

U 67

Method SW8270C SIM

Benzidine

 Laboratory Sample Number
 SH6652-16
 SH6652-17

 Sample Number
 0-087-081814-0019
 0-087-081814-0020

 Sample Location
 LBG02
 LBG03

 Percent Solids
 76
 69

3000 J 680

 Analyte
 Result ug/Kg
 RL ug/Kg
 Result ug/Kg
 RL ug/Kg

 Benzidine
 U
 87
 790 J 190

Environmental Response Team/Scientific Engineering, Response and Analytical Services 2890 Woodbridge Avenue, Building 209 Annex Edison NJ 08837



Table 2.1 Results of the LCS/LCSD Analysis for Benzidine in Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site

Sample ID LCS 08/21/14

Page 1 of 1

	LCS/LCSD Spike Added	LCS Recovered	LCS	LCSD Recovered	LCSD		Q	C Limits
Analyte	ug/Kg	ug/Kg	% Recovery	ug/Kg	% Recovery	RPD	RPD	% Recovery
Benzidine	133	67	50	67	50	0	50	10-150



Table 2.2 Results of the MS/MSD Analysis for Benzidine in Sediment WA # SERAS-087 Cornell Dublier Electronics Vapor Intrusion Site Results Based on Dry Weight

Sample ID 0-087-081814-0019 Page 1 of 1

	Sample Result	MS/MSD Spike Added	MS Result	MS	MSD Result	MSD		Q	C Limits
Analyte	ug/Kg	ug/Kg	ug/Kg	% Recovery	ug/Kg	% Recovery	RPD	RPD	% Recovery
Benzidine	U	175	92	53	91	52	2	50	10-150

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Katahdin Analytical Services 600 Technology Way Scarborough, ME 04074 207-874-2400x17

Attn: Jennifer Obrin

August 11, 2014

As per Lockheed Martin / SERAS BPA 4100675134, for Project 0-087, please analyze the following

Analysis/Method	Matrix	# of samples					
Benzidine SW846-8270	Sediment	17					
The complete data package must include all items on the deliverables checklist. All sample and QC results must be							

The complete data package must include all items on the deliverables checklist. All sample and QC results must be summarized in a .csv file.

The samples are expected to arrive at your laboratory on or about August 20, 2014. All applicable QA/QC (eg: MS/MSD and Duplicates) analysis as per method, will be performed on our sample matrix. Preliminary sample and QC result tables plus a signed copy of our Chain of Custody must be emailed to SERAS 5 business days after receipt of the samples. The complete data package is due 10 business days after receipt of the samples.

Please submit all reports and questions concerning this project to Misty Barkley at (732) 321-4205 or misty.barkley@Imco.com.

Sincerely,

Jay Patel

Analytical Support Chemist Lockheed Martin / SERAS Project

CC.

M. Sprenger

J. Patel

D. Killeen

C. Gussman

K. Taylor

Page 1 of 1 USEPA

AirbillNo:

DateShipped: 8/19/2014

CarrierName: FedEx

SHESSZ

CHAIN OF CUSTODY RECORD

Site #: 0-087

Contact Name: Christopher Gussman Contact Phone: 732-321-4200 No: 2-081914-095139-0009

Cooler #:

Lab: Katahdin Analytical Services Lab Phone: 207-874-2400

Lab#	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Lab QC
	0-087-081814-0021	LBG04	Benzidine	Sediment	8/18/2014	11:10	. 1	8 ounce jar	
	0-087-081814-0022	LBG05	Benzidine	Sediment	8/18/2014	11:25	1	8 ounce jar	
	0-087-081814-0023	LBG06	Benzidine	Sediment	8/18/2014	11:50	1	8 ounce jar	
	0-087-081814-0024	LBG07	Benzidine	Sediment	8/18/2014	12:10	1	8 ounce jar	
	0-087-081814-0025	LBG08	Benzidine	Sediment	8/18/2014	12:25	1	8 ounce jar	
	0-087-081814-0026	LBG09	Benzidine	Sediment	8/18/2014	12:50	1	8 ounce jar	
	0-087-081814-0027	LBG10	Benzidine	Sediment	8/18/2014	13:05	1	8 ounce jar	
	0-087-081814-0028	LBG11	Benzidine	Sediment	8/18/2014	13:20	1	8 ounce jar	
	0-087-081814-0029	LBG12	Benzidine	Sediment	8/18/2014	14:00	1	8 ounce jar	
	0-087-081814-0030	LBG13	Benzidine	Sediment	8/18/2014	14:20	1	8 ounce jar	
	0-087-081814-0031	LBG14	Benzidine	Sediment	8/18/2014	14:45	1	8 ounce jar	
	0-087-081814-0032	LBG03A	Benzidine	Sediment	8/18/2014	10:52	1	8 ounce jar	
	0-087-081814-0033	FD01	Benzidine	Sediment	8/18/2014	10:02	1	8 ounce jar	
	0-087-081814-0034	Field Blank 01	Benzidine	Sediment	8/18/2014	12:00	1	8 ounce jar	9
	0-087-081814-0018	LBG01	Benzidine	Sediment	8/18/2014	10:00	1	8 ounce jar	
	0-087-081814-0019	LBG02	benzidine	Sediment	8/18/2014	10:20	1	8 ounce jar	Y
	0-087-081814-0020	LBG03	Benzidine	Sediment	8/18/2014	10:50	1	8 ounce jar	
1			Can				1	-	

	SAMPLES TRANSFERRED FROM
Special Instructions: Benzidine is only analyte of interest	CHAIN OF CUSTODY #

Items/Reason	Relinquished by (Signature and Organization)		Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Acc/Analysis	Christoph Show Con SERAJ	11:00	alen ill	3/20 0920	